



Assembly Instructions



Didactics - Gear Unit Technology
Helical Gear Unit R57F AD2



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1 General information

1.1 About this documentation

The current version of the documentation is the original.

This documentation is an integral part of the product. The documentation is intended for all employees who perform work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the systems and their operation as well as persons who work on the product independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation, or if you require further information, contact SEW-EURODRIVE.

1.2 Important notes

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product is damaged, it must not be assembled, installed or started up.

Removing covers without authorization, improper use, or incorrect installation and operation may result in severe injuries to persons or damage to machinery.

1.3 Structure of the safety notes

1.3.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes.

Signal word	Meaning	Consequences if disregarded
▲ DANGER	Imminent hazard	Severe or fatal injuries
▲ WARNING	Possible dangerous situation	Severe or fatal injuries
▲ CAUTION	Possible dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

1.3.2 Structure of section-related safety notes

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:



SIGNAL WORD


Type and source of hazard.

Possible consequence(s) if disregarded.

- Measure(s) to prevent the hazard.

Meaning of the hazard symbols

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
	General hazard

1.3.3 Structure of embedded safety notes

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous action.

This is the formal structure of an embedded safety note:

▲ SIGNAL WORD Type and source of hazard. Possible consequence(s) if disregarded. Measure(s) to prevent the hazard.

1.4 Designated use

The model is intended for training purposes only. The model serves to explain how gear units are assembled and disassembled and how they operate. Never fill the model with oil and/or operate it on a motor.

1.5 Rights to claim under limited warranty

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

1.6 Applicable documentation

Observe the following applicable documents:

- "SPIROPLAN® W Gear Units, R..7, F..7, K..7, K..9, S..7 Series" assembly and operating instructions

Always use the latest edition of documentation and software.

The SEW-EURODRIVE website (www.sew-eurodrive.com) provides a wide selection of documents for download in various languages. If required, you can also order printed and bound copies of the documentation from SEW-EURODRIVE.

You can order the additional material "Didactics – Gear Unit Technology Documentation Package" from your contact person; see chapter "Contact persons" (→ 38).

1.7 Product names and trademarks

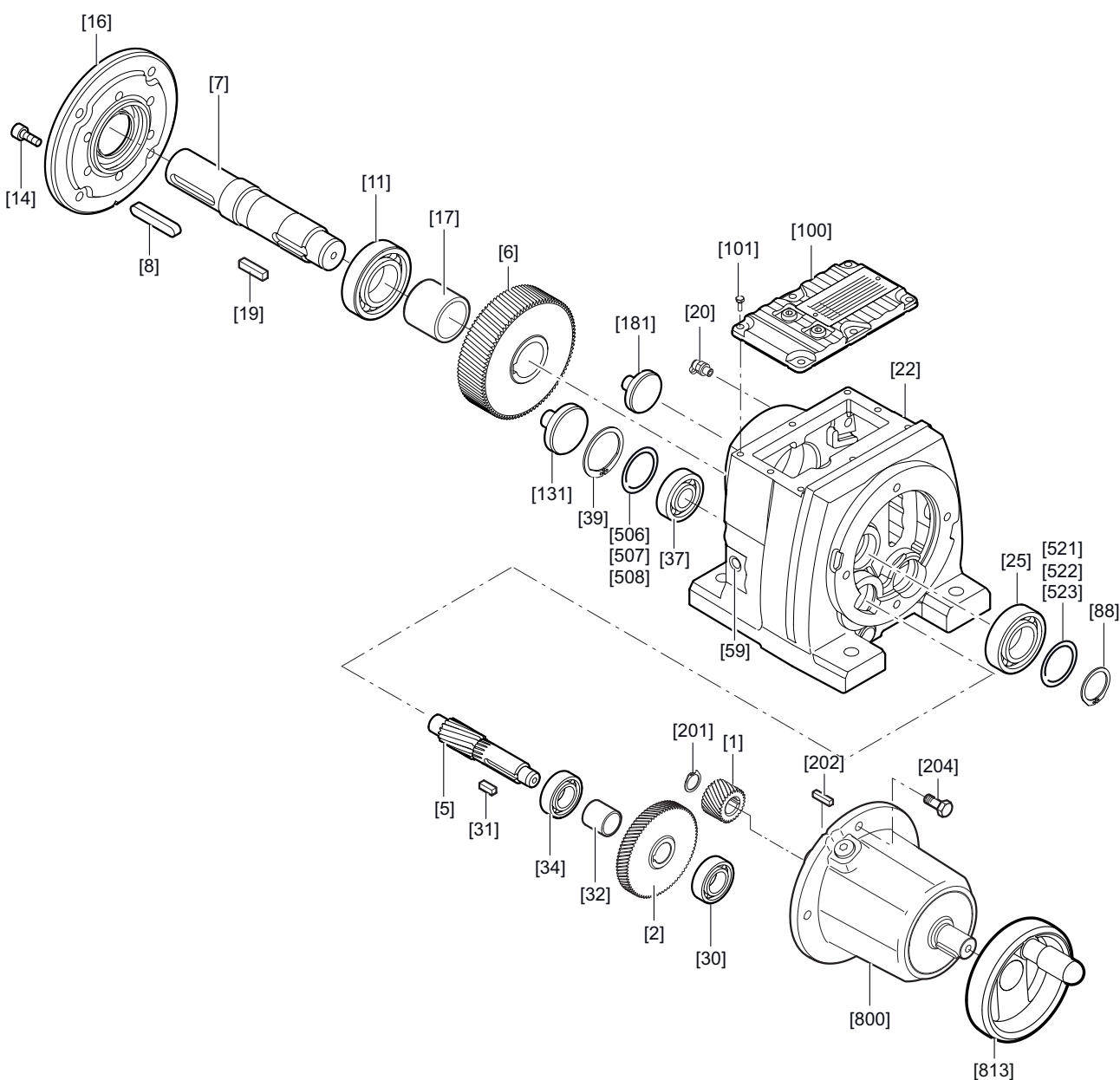
The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.8 Copyright notice

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2 Gear unit structure

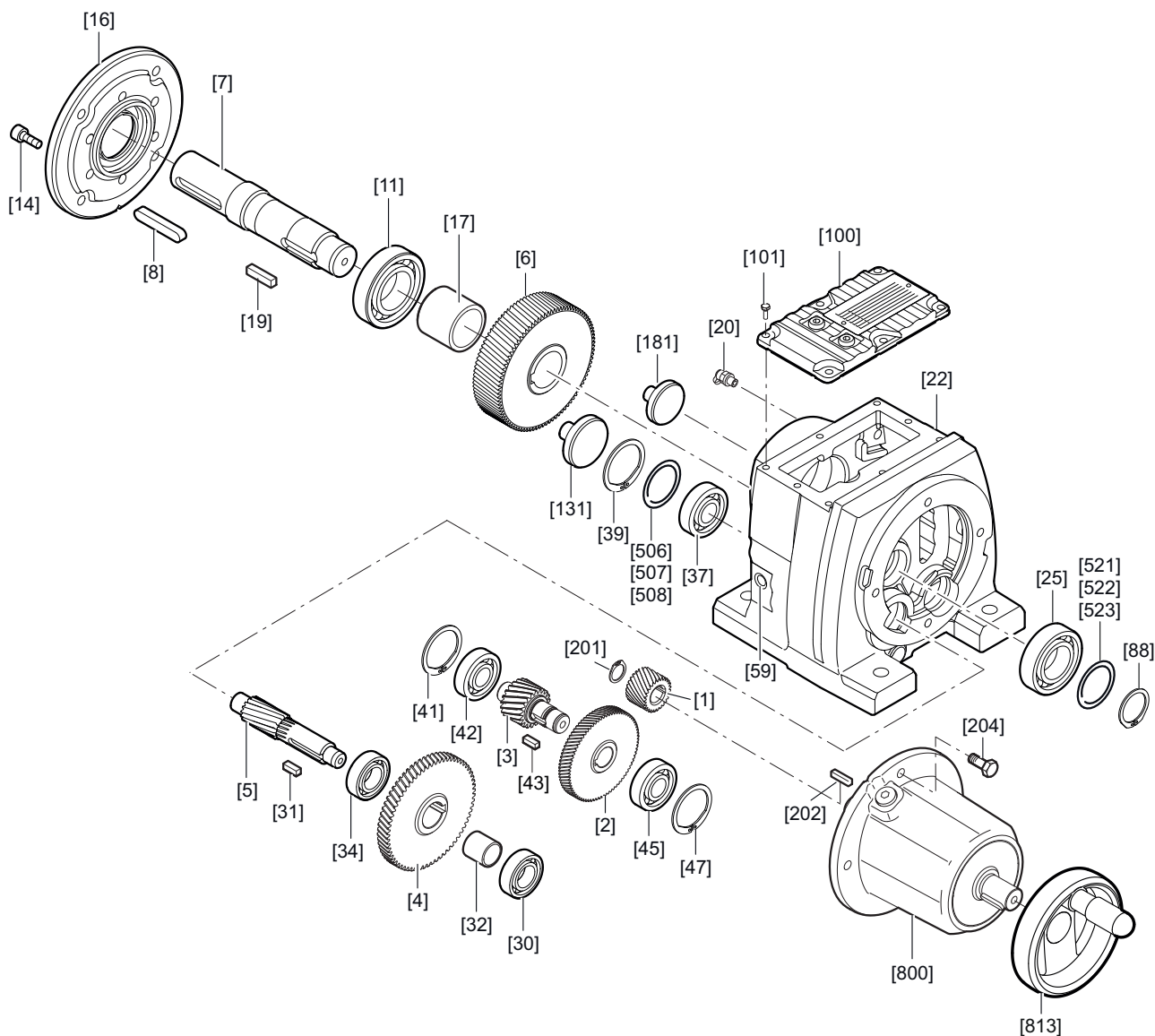
2.1 Basic structure of 2-stage helical gear units



20401309707

[1] Pinion	[19] Key	[59] Screw plug	[507] Shim
[2] Gear	[20] Breather valve	[88] Retaining ring	[508] Shim
[5] Pinion shaft	[22] Gear unit housing	[100] Gear unit cover	[521] Shim
[6] Gear	[25] Rolling bearing	[101] Hex head screw	[522] Shim
[7] Output shaft	[30] Rolling bearing	[131] Closing cap	[523] Shim
[8] Key	[31] Key	[181] Closing cap	[800] Input shaft assembly
[11] Rolling bearing	[32] Spacer tube	[201] Retaining ring	[813] Handwheel
[14] Screw	[34] Rolling bearing	[202] Key	
[16] Output flange	[37] Rolling bearing	[204] Screw	
[17] Spacer tube	[39] Retaining ring	[506] Shim	

2.2 Basic structure of 3-stage helical gear units

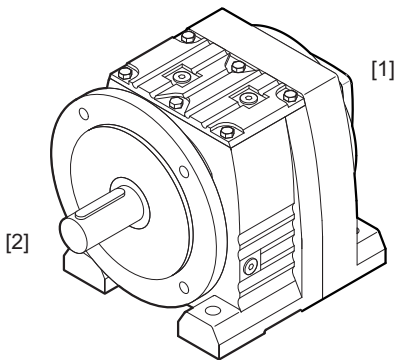


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[1] Pinion	[17] Spacer tube	[41] Retaining ring	[201] Retaining ring
[2] Gear	[19] Key	[42] Rolling bearing	[202] Key
[3] Pinion shaft	[20] Breather valve	[43] Key	[204] Screw
[4] Gear	[22] Gear unit housing	[45] Rolling bearing	[506] Shim
[5] Pinion shaft	[25] Rolling bearing	[47] Retaining ring	[507] Shim
[6] Gear	[30] Rolling bearing	[59] Screw plug	[508] Shim
[8] Key	[32] Spacer tube	[88] Retaining ring	[521] Shim
[7] Output shaft	[31] Key	[101] Hex head screw	[523] Shim
[11] Rolling bearing	[34] Rolling bearing	[100] Gear unit cover	[522] Shim
[14] Screw	[37] Rolling bearing	[131] Closing cap	[800] Input shaft assembly
[16] Output flange	[39] Retaining ring	[181] Closing cap	[813] Handwheel

2.3 Input and output end

The following figure shows the input and output end of the gear unit:



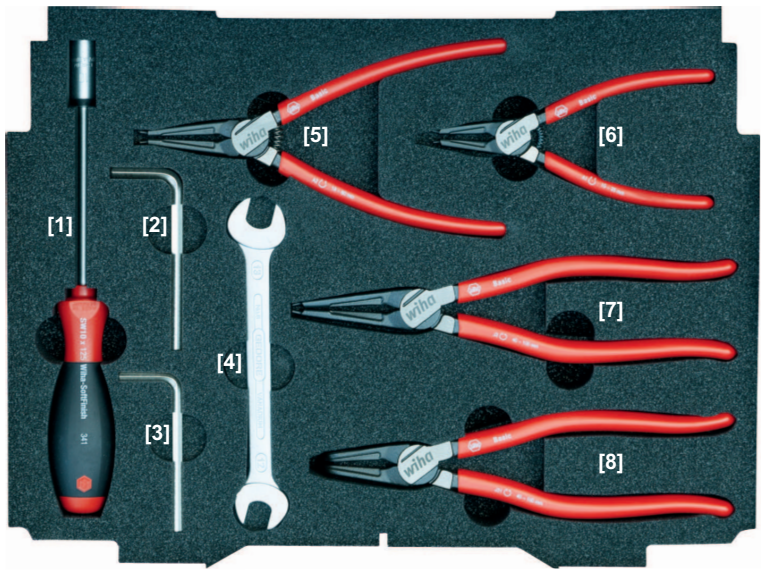
19433251083

- [1] Input end
- [2] Output end

2.4 Training kit

2.4.1 Content of the parts case

Tools



9007208008190347

- [1] Socket wrench size 10

[2] Allen key size 6

[3] Allen key size 5

[4] Open-end wrench size 12/13
- [5] Retaining ring pliers (inner)

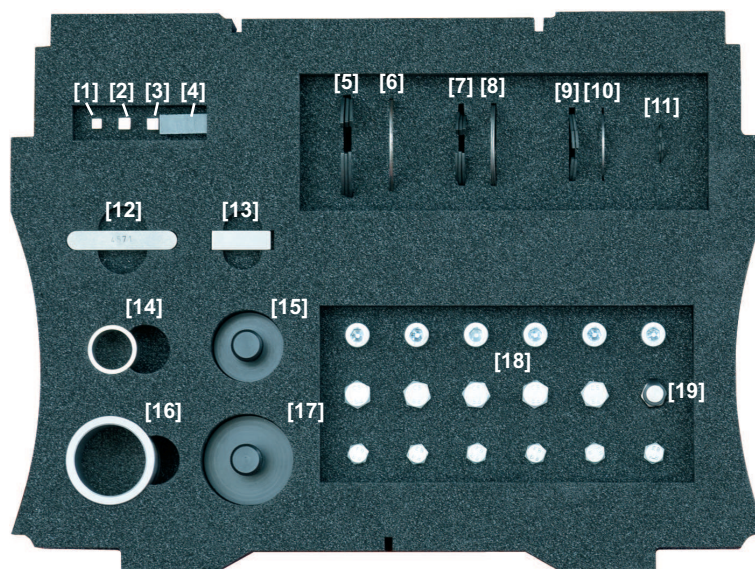
[6] Retaining ring pliers (inner)

[7] Retaining ring pliers (outer)

[8] Angled retaining ring pliers (outer)

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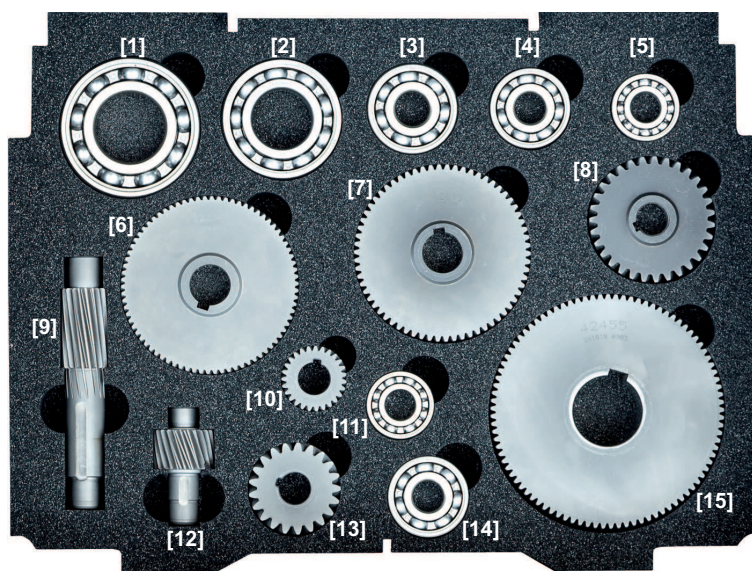
Small gear unit parts



27021606526768139

- | | | |
|-----------------------------------|------------------------------------|------------------------------|
| [1] Key B5 × 5 × 10 | [8] Shims 30 × 42 × (0.1/0.3/0.5) | [15] Closing cap D37 × 30 mm |
| [2] Key B6 × 6 × 10 | [9] Retaining ring 30 × 1.5 | [16] Spacer tube 13442465/03 |
| [3] Key B6 × 6 × 16 | [10] Shims 25 × 35 × (0.5/0.3/0.1) | [17] Closing cap D47 × 30 mm |
| [4] Magnet | [11] Retaining ring 16 × 1 | [18] Screws |
| [5] Retaining rings 47 × 1.75 | [12] Key A10 × 8 × 56 | [19] Breather valve |
| [6] Shims 37 × 47 × (0.1/0.3/0.5) | [13] Key B10 × 8 × 28 | |
| [7] Retaining rings 35 × 1.5 | [14] Spacer tube 13442473/003 | |

Gearing components, deep groove ball bearing, shaft

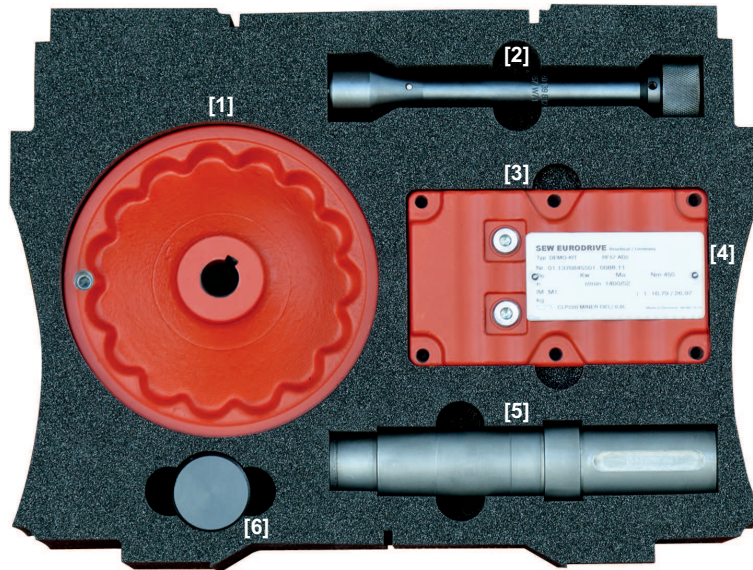


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- | | | |
|-----------------------------------|------------------------|------------------------------------|
| [1] Deep groove ball bearing 6207 | [6] Gear 42668 | [11] Deep groove ball bearing 6202 |
| [2] Deep groove ball bearing 6206 | [7] Gear 42234 | [12] Pinion shaft 42658 |
| [3] Deep groove ball bearing 6303 | [8] Gear 41653 | [13] Pinion 41610 |
| [4] Deep groove ball bearing 6004 | [9] Pinion shaft 42447 | [14] Deep groove ball bearing 6302 |
| [5] Deep groove ball bearing 6202 | [10] Pinion 41343 | [15] Gear 42455 |

Handwheel, cover, shaft

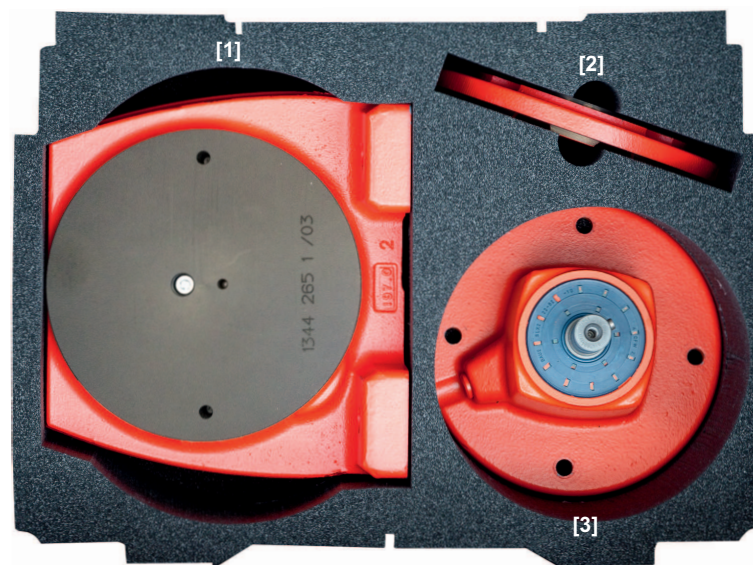
2



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- | | | | |
|-----|------------------------------|-----|-----------------|
| [1] | Handwheel | [4] | Nameplate |
| [2] | Joining tool | [5] | Output shaft |
| [3] | Inspection cover with gasket | [6] | Assembly sleeve |

Housing, adapter, flange



9007208009026315

- | | |
|-----|--------------------------|
| [1] | Gear unit housing |
| [2] | Flange |
| [3] | Input shaft assembly AD2 |

3 Assembly

3.1 Information about the assembly



⚠ WARNING

Gear units have moving gears and parts.

Severe injuries from crushing.

- Do not place your fingers in the gear unit housing while parts are rotating.
- Remove the crank handle before performing any work on the gear unit housing.



⚠ WARNING

Parts in the gear unit case and the case itself are heavy and may fall or topple over.

Severe injuries from crushing.

- Secure the parts by taking appropriate measures.
- Wear sturdy shoes.



⚠ CAUTION

Parts of the gear unit may have sharp edges, especially at keyways and gearings.

Risk of injury from incised wounds.

- Always wear suitable gloves during assembly and disassembly.



⚠ CAUTION

Clamped retaining rings may loosen and spring out from the pliers.

Risk of injury due to flying parts.

- Wear safety goggles during installation and removal of retaining rings.
- Always insert the pliers into the small bore on the retaining ring first. (The bore of the retaining ring is conical)



NOTICE

Parts of the gear unit may be heavy and sharp-edged.

Damage to the working surface.




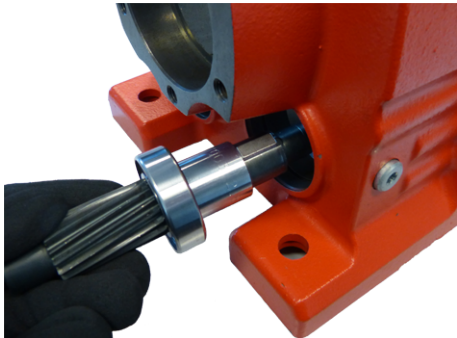
- Use the included assembly pad during assembly and disassembly.

3.2 Assembling the 2-stage gear unit




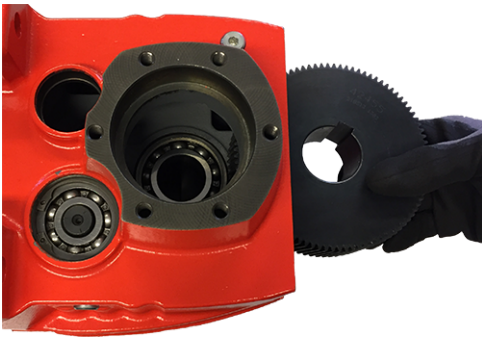





INFORMATION




Numbers in square brackets designate the components from the exploded-view drawing.




Step	Figure	Procedure
1	 <p style="text-align: right;">9007199749716491</p>	<ul style="list-style-type: none"> Insert the deep groove ball bearing (6302) [30] into the gear unit housing [22] from the inside on the input side.
2	 <p style="text-align: right;">9007199749722763</p>	<p>Installation of the pinion shaft requires the following:</p> <ul style="list-style-type: none"> Pinion shaft (42447) [5] Deep groove ball bearing (6004) [34] Spacer tube [32] Key B6 × 6 × 16 [31]
3	 <p style="text-align: right;">9007199749910539</p>	<ul style="list-style-type: none"> Assemble the pinion shaft (42447) with the deep groove ball bearing (6004), spacer tube, and key B6 × 6 × 16 as shown in the figure.
4	 <p style="text-align: right;">19401258379</p>	<ul style="list-style-type: none"> Insert the pre-assembled pinion shaft [5] on the output end of the gear unit housing with the key in front. Simultaneously insert the gear (42234) [2] into the gear unit housing from the input side. <ul style="list-style-type: none"> Important: The part number on the front side of the gear must be legible from the input side.


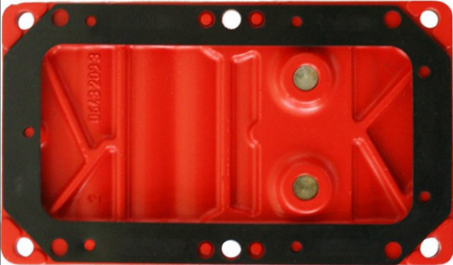

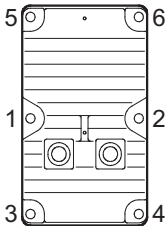
Step	Figure	Procedure
5	 <p>9007199751515147</p>	<ul style="list-style-type: none"> Insert the pre-assembled pinion shaft through the gear (42234) [2] into the deep groove ball bearing (6302) [30].
6	 <p>9007199751715083</p>	<ul style="list-style-type: none"> Insert the assembly aid into the gear unit housing on the input side. Place the gear unit housing onto the assembly aid (with the output end pointing upwards).
7	 <p>9007199751720331</p>	<ul style="list-style-type: none"> Place the deep groove ball bearing (6303) [37] onto the pinion shaft.




Step	Figure	Procedure
8	 <p style="text-align: center;">9007199751841803</p>	<ul style="list-style-type: none"> Equalize the deep groove ball bearing (6303) with shims 37 × 47 [506], [507], [508] to zero clearance. <p>Zero clearance: Insert shims until the shaft can no longer be moved in axial direction.</p>
9	 <p style="text-align: center;">9007199751847563</p>	<ul style="list-style-type: none"> Install the retaining ring 47 × 1.75 [39] using the compatible retaining ring pliers. Check whether the deep groove ball bearing and the shaft are equalized correctly. <p>Once the retaining ring is installed, the supporting ring must no longer be able to be moved or turned.</p>
10	 <p style="text-align: center;">9007199751878411</p>	<ul style="list-style-type: none"> Insert the deep groove ball bearing (6206) [25] into the middle wall of the gear unit housing.
11	 <p style="text-align: center;">18014399006625419</p>	<ul style="list-style-type: none"> When inserting the gear (42455) [6], make sure that the part number on the gear faces towards the output end of the gear unit. <ul style="list-style-type: none"> Important: The flange of the gear must lie on the previously assembled deep groove ball bearing. Align the gear to the bearing, so that the shaft can be inserted through the individual components.

Step	Figure	Procedure
12	 <p>9007199751902475</p>	<p>Installation of the output shaft requires the following:</p> <ul style="list-style-type: none"> • Output shaft [7] • Deep groove ball bearing (6207) [11] • Spacer tube [17] • Key B10 × 8 × 28 [19]
13	 <p>9007199751908363</p>	<ul style="list-style-type: none"> • Assemble the output shaft with the deep groove ball bearing (6207), spacer tube, and key B10 × 8 × 28 as shown in the figure.
14	 <p>9007199751914123</p>	<ul style="list-style-type: none"> • Insert the pre-assembled output shaft into the gear unit housing through the gear and deep groove ball bearing.


Step	Figure	Procedure
15	 <p style="text-align: right; margin-top: 5px;">9007199751949451</p>	<ul style="list-style-type: none"> Insert both closing caps [131], [181] into the gear unit housing.
16	 <p style="text-align: right; margin-top: 5px;">19419099019</p>	<ul style="list-style-type: none"> Place the assembly sleeve onto the output shaft. <ul style="list-style-type: none"> Note: The assembly sleeve prevents the key-way from damaging the oil seal. Mount the flange [16] to fit the bore pattern.
17	 <p style="text-align: right; margin-top: 5px;">19419102987</p>	<ul style="list-style-type: none"> Screw down the flange [16] with the M8 × 20 [14] screws and the size 6 socket hex wrench in diametrically opposite sequence. Optionally, you can tighten the screws with a torque wrench. The M8 screws consist of corrosion-resistant steel with a strength class of 70. This results in a tightening torque of 19 Nm.

Step	Figure	Procedure
18	 <p>19420450955</p>	<ul style="list-style-type: none"> Remove the assembly sleeve from the output shaft.
19	 <p>9007199752788107</p>	<ul style="list-style-type: none"> Insert key A10 × 8 × 56 [8] into the output shaft end. Remove the assembly aid on the input side. Push the output shaft toward the flange. Counter-hold the deep groove ball bearing (6206) [25] until the shaft sits on the stop.
20	 <p>9007199752793099</p>	<ul style="list-style-type: none"> Equalize the output shaft to zero clearance using the shims 30 × 42 [522], [523]. Zero clearance: Insert shims until the shaft can no longer be moved in axial direction.

Step	Figure	Procedure
21	 <p style="text-align: center;">9007199752799243</p>	<ul style="list-style-type: none"> Install the retaining ring 30 × 1.5 [88] in the groove of the output shaft [7] using the compatible retaining ring pliers.
22	 <p style="text-align: center;">9007199752804747</p>	<ul style="list-style-type: none"> Check that the rubber gasket is seated properly on the bottom of the gear unit cover.
23	 <p style="text-align: center;">9007199752837899</p>	<ul style="list-style-type: none"> Install the gear unit cover [100]. Screw the gear unit cover tight with M6 × 16 hex head screws [101], from inside to outside, in the following sequence: <div style="text-align: center;">  </div> <p>Optionally, you can tighten the screws with a torque wrench. The M6 screws consist of corrosion-resistant steel with a strength class of 70. This results in a tightening torque of 8 Nm.</p>

Step	Figure	Procedure
24	 <p>9007199752843403</p>	<ul style="list-style-type: none"> Remove one of the screw plugs [59] on the gear unit according to the required mounting position (here, M1). Screw the breather valve [20] into this opening. Remove the transport protection on the breather valve. <ul style="list-style-type: none"> Note: The transport protection on the breather valve prevents oil from escaping during the transport of gear units used industrially. The transport protection must be removed before operation. Heat is generated during operation, which causes the oil and air to expand. The pressure that can be created in the gear unit is released via the breather valve.
25	 <p>9007199752848395</p>	<p>Installation of the drive cover requires the following:</p> <ul style="list-style-type: none"> Input shaft assembly AD2 [800] Pinion (41343) [1] Retaining ring 16 × 1 [201]
26	 <p>9007199753131531</p>	<ul style="list-style-type: none"> Mount the pinion (41343) onto the shaft of the input shaft assembly AD2. Important: Join the pinion onto the shaft with the radius.

Step	Figure	Procedure
27	 <p style="text-align: center;">9007199753137291</p>	<ul style="list-style-type: none"> Fit the retaining ring 16 × 1 using the retaining ring pliers.
28	 <p style="text-align: center;">9007199753491211</p>	<ul style="list-style-type: none"> Place the drive cover [800] on. Tilt the drive cover into the gear unit housing in such a way that the gears fit into one another and the flange is flush with the gear unit housing. <ul style="list-style-type: none"> Note: By tilting the pinion into the gear wheel, the pinion is not damaged. <p>In gear units used industrially, damage to the gear wheel or the pinion can occur that is audible in later operation.</p>
29	 <p style="text-align: center;">9007199753497483</p>	<ul style="list-style-type: none"> Fasten the drive cover with 4 M8 × 20 hex head screws [204]. Insert the screws manually. Tighten the screws in diametrically opposite sequence using a size 12/13 open-end wrench. <p>Optionally, you can tighten the screws with a torque wrench. The M8 screws consist of corrosion-resistant steel with a strength class of 70. This results in a tightening torque of 19 Nm.</p>

Step	Figure	Procedure
30		<ul style="list-style-type: none">• Place the handwheel [813] on the input shaft.• Turn the crank and check whether the output shaft turns.• Assembly of the 2-stage variant of the helical gear unit is complete.




3.3 Assembling the 3-stage gear unit




INFORMATION









Numbers in square brackets designate the components from the exploded-view drawing.




Step	Figure	Procedure
1	 <p style="text-align: right;">9007199749716491</p>	<ul style="list-style-type: none"> Insert the deep groove ball bearing (6302) [30] into the gear unit housing [22] from the inside on the input side.
2		<p>Installation of the pinion shaft requires the following:</p> <ul style="list-style-type: none"> Pinion shaft (42447) [5] Deep groove ball bearing (6004) [34] Gear (42668) [4] Spacer tube [32] Key B6 × 6 × 10 [31]
3	 <p style="text-align: right;">9007199754122251</p>	<ul style="list-style-type: none"> Assemble the pinion shaft (42447) with the deep groove ball bearing (6004) and key B6 × 6 × 10 as shown in the figure.

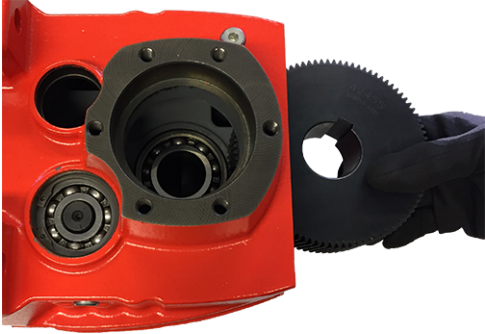



Step	Figure	Procedure
4	 <p>9007199754144267</p>	<ul style="list-style-type: none"> Insert the pre-assembled pinion shaft [5] on the output end of the gear unit housing with the key in front. Simultaneously insert the gear (42668) [4] into the gear unit housing from the input side. <ul style="list-style-type: none"> Important: The part number on the front side of the gear must be legible from the input side.
5	 <p>9007199754168587</p>	<ul style="list-style-type: none"> Insert the pre-assembled pinion shaft [5] through the gear [4] and the spacer tube into the deep groove ball bearing.
6	 <p>9007199754184587</p>	<p>The figure shows the assembled pinion shaft [5] with the gear [4] and spacer tube [32].</p> <p>In comparison to the 2-stage design, the gear and the spacer tube have swapped positions.</p>




Step	Figure	Procedure
7	 <p style="text-align: center;">9007199754252555</p>	<ul style="list-style-type: none"> Install the retaining ring 35 × 1.5 [47] on the adjacent bore using the compatible retaining ring pliers.
8	 <p style="text-align: center;">9007199754246667</p>	<ul style="list-style-type: none"> Insert the deep groove ball bearing (6202) [45] into the gear unit housing on the input side.
9	 <p style="text-align: center;">9007199754656139</p>	<ul style="list-style-type: none"> Fit the pinion shaft (42658) [3] with the key B5 × 5 × 10 [43], as shown in the figure.
10		<ul style="list-style-type: none"> Insert the pre-assembled pinion shaft [3] into the joining tool. Clamp the shaft in it by rotating the end of the joining tool.




Step	Figure	Procedure
11	 <p>9007199754808715</p>	<ul style="list-style-type: none"> Insert the pinion shaft [3], which is clamped into the joining tool, on the output end of the gear unit housing. Simultaneously insert the gear (41653) [2] from the input side. <ul style="list-style-type: none"> Important: The part number on the front side of the gear must be legible from the input side.
12	 <p>9007199754814987</p>	<ul style="list-style-type: none"> Hold the gear [2] and the pinion shaft [3] securely. Loosen the clamping of the joining tool by rotating the end of the joining tool. Carefully remove the joining tool from the gear unit housing.
13	 <p>9007199755153547</p>	<ul style="list-style-type: none"> Insert the assembly aid into the gear unit housing on the input side. Place the gear unit housing onto the assembly aid (with the output end pointing upwards).


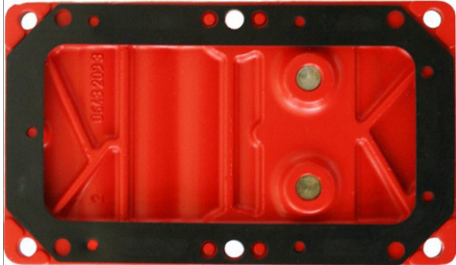

Step	Figure	Procedure
14	 <p style="text-align: center;">9007199751720331</p>	<ul style="list-style-type: none"> Place the deep groove ball bearing (6303) [37] onto the pinion shaft [5].
15	 <p style="text-align: center;">9007199751841803</p>	<ul style="list-style-type: none"> Equalize the deep groove ball bearing (6303) [37] with shims 37 × 47 [506], [507], [508] to zero clearance. <p>Zero clearance: Insert shims until the shaft can no longer be moved in axial direction.</p>
16	 <p style="text-align: center;">9007199751847563</p>	<ul style="list-style-type: none"> Install the retaining ring 47 × 1.75 [39] using the compatible retaining ring pliers. Check whether the deep groove ball bearing and the shaft are equalized correctly. <p>Once the retaining ring is installed, the supporting ring must no longer be able to be moved or turned.</p>




Step	Figure	Procedure
17	 <p>9007199758767371</p>	<ul style="list-style-type: none"> Insert the deep groove ball bearing (6202) [42] into the middle wall of the gear unit housing.
18	 <p>9007199759315851</p>	<ul style="list-style-type: none"> Fit the retaining ring 35 x 1.5 [41] using the angled retaining ring pliers.
19	 <p>9007199751878411</p>	<ul style="list-style-type: none"> Insert the deep groove ball bearing (6206) [25] into the middle wall of the gear unit housing.

Step	Figure	Procedure
20	 <p style="text-align: right;">18014399006625419</p>	<ul style="list-style-type: none"> When inserting the gear (42455) [6], make sure that the part number on the gear faces towards the output end of the gear unit. <ul style="list-style-type: none"> Important: The flange of the gear must lie on the previously assembled deep groove ball bearing. Align the gear to the bearing, so that the shaft can be inserted through the individual components.
21		<p>Installation of the output shaft requires the following:</p> <ul style="list-style-type: none"> Output shaft [7] Deep groove ball bearing (6207) [11] Spacer tube [17] Key B10 × 8 × 28 [19]
22		<ul style="list-style-type: none"> Assemble the output shaft with the deep groove ball bearing (6207), spacer tube, and key B10 × 8 × 28 as shown in the figure.
23	 <p style="text-align: right;">9007199760438411</p>	<ul style="list-style-type: none"> Insert the pre-assembled output shaft into the gear unit housing through the gear [6] and deep groove ball bearing [25].


Step	Figure	Procedure
24	 <p>9007199751949451</p>	<ul style="list-style-type: none"> Insert both closing caps [131], [181] into the gear unit housing.
25	 <p>19419099019</p>	<ul style="list-style-type: none"> Place the assembly sleeve onto the output shaft. <ul style="list-style-type: none"> Note: The assembly sleeve prevents the keyway from damaging the oil seal. Mount the flange [16] to fit the bore pattern.
26	 <p>19419102987</p>	<ul style="list-style-type: none"> Screw down the flange [16] with the M8 × 20 [14] screws and the size 6 socket hex wrench in diametrically opposite sequence. <p>Optionally, you can tighten the screws with a torque wrench. The M8 screws consist of corrosion-resistant steel with a strength class of 70. This results in a tightening torque of 19 Nm.</p>

Step	Figure	Procedure
27	 <p style="text-align: right;">19420450955</p>	<ul style="list-style-type: none"> Remove the assembly sleeve from the output shaft.
28	 <p style="text-align: right;">9007199752788107</p>	<ul style="list-style-type: none"> Insert key A10 × 8 × 56 [8] into the output shaft end. Remove the assembly aid on the input side. Push the output shaft toward the flange. Counter-hold the deep groove ball bearing (6206) [25] until the shaft sits on the stop.
29	 <p style="text-align: right;">9007199752793099</p>	<ul style="list-style-type: none"> Equalize the output shaft to zero clearance using the shims 30 × 42 [522], [523]. Zero clearance: Insert shims until the shaft can no longer be moved in axial direction.

Step	Figure	Procedure
30	 <p>9007199752799243</p>	<ul style="list-style-type: none"> Install the retaining ring 30 × 1.5 [88] in the groove of the output shaft [7] using the compatible retaining ring pliers.
31	 <p>9007199752804747</p>	<ul style="list-style-type: none"> Check that the rubber gasket is seated properly on the bottom of the gear unit cover.
32	 <p>9007199752837899</p>	<ul style="list-style-type: none"> Install the gear unit cover [100]. Screw the gear unit cover tight with M6 × 16 hex head screws [101], from inside to outside, in the following sequence: <ul style="list-style-type: none"> 5 6 1 2 3 4 <p>Optionally, you can tighten the screws with a torque wrench. The M6 screws consist of corrosion-resistant steel with a strength class of 70. This results in a tightening torque of 8 Nm.</p>

Step	Figure	Procedure
33	 <p style="text-align: center;">9007199752843403</p>	<ul style="list-style-type: none"> Remove one of the screw plugs [59] on the gear unit according to the required mounting position (here, M1). Screw the breather valve [20] into this opening. Remove the transport protection on the breather valve. <ul style="list-style-type: none"> Note: The transport protection on the breather valve prevents oil from escaping during the transport of gear units used industrially. The transport protection must be removed before operation. Heat is generated during operation, which causes the oil and air to expand. The pressure that can be created in the gear unit is released via the breather valve.
34	 <p style="text-align: center;">9007218747846795</p>	<p>Installation of the drive cover requires the following:</p> <ul style="list-style-type: none"> Input shaft assembly AD2 [800] Pinion (41610) [1] Retaining ring 16 × 1 [201]
35	 <p style="text-align: center;">9007218747850379</p>	<ul style="list-style-type: none"> Mount the pinion (41610) onto the shaft of the input shaft assembly AD2. Important: Join the pinion onto the shaft with the radius.

Step	Figure	Procedure
36	 <p>9007218747853963</p>	<ul style="list-style-type: none"> Fit the retaining ring 16 × 1 using the retaining ring pliers.
37	 <p>9007199753491211</p>	<ul style="list-style-type: none"> Place the drive cover [800] on. Tilt the drive cover into the gear unit housing in such a way that the gears fit into one another and the flange is flush with the gear unit housing. <ul style="list-style-type: none"> Note: By tilting the pinion into the gear wheel, the pinion is not damaged. <p>In gear units used industrially, damage to the gear wheel or the pinion can occur that is audible in later operation.</p>
38	 <p>9007199753497483</p>	<ul style="list-style-type: none"> Fasten the drive cover with 4 M8 × 20 hex head screws [204]. Insert the screws manually. Tighten the screws in diametrically opposite sequence using a size 12/13 open-end wrench. <p>Optionally, you can tighten the screws with a torque wrench. The M8 screws consist of corrosion-resistant steel with a strength class of 70. This results in a tightening torque of 19 Nm.</p>

Step	Figure	Procedure
39		<ul style="list-style-type: none"> Place the handwheel [813] on the input shaft. Turn the crank and check whether the output shaft turns. Assembly of the 3-stage variant of the helical gear unit is complete.

3.4 Disassembling the gear unit

The gear unit is disassembled in the reverse order of the assembly.

The magnet included in the delivery allows for easier removal and disassembly of shims, supporting rings and other small parts.

4 Spare parts list

Designation	Item no.	Quantity	Part no.
Hex head screw ISO 4017 M6×16-A2-70	[101]	6	00118540
Hex head screw ISO 4017 M8×20-A2-70	[204]	5	00118583
Output flange R57F complete demo case	[16]	1	13445359
Output shaft R57/RF57 35×70 demo case	[7]	1	13438697
Drive cover complete AD2 demo case	[800]	1	13442503
Cover complete R57 demo case	[100]	1	13442996
Spacer tube R57/RF57 demo case	[17]	1	13442465
Spacer tube R57/RF57 demo case	[32]	1	13442473
Breather valve W4087 M10x1-NIRO-HEI	[20]	1	00136239
Joining tool R, RF57-W7.1	–	1	09501398
Gear unit housing R57F demo case	[22]	1	06416756
Handwheel W4315 160×16-R-AL	[813]	1	13317970
Magnet Oxyd300-25×10×5	–	1	19055714
Assembly aid R57/RF57	–	1	13442651
Assembly sleeve R57F demo case R57F	–	1	13442643
Key AD2 A4×4×18 demo case	[202]	1	13442619
Key DIN 6885-1 A10×8×56 Niro	[8]	1	13228218
Key R57/R57F B10×8×28 demo case	[19]	1	13442570
Key R57/R57F B5×5×10 demo case	[43]	1	13442600
Key R57/R57F B6×6×10 demo case	[31]	1	13442597
Key R57/R57F B6×6×16 demo case	[31]	1	13442589
Shim DIN 988 25×35×0.3-St	[516]	3	00103934
Shim DIN 988 25×35×0.5-St	[517]	3	00104167
Shim DIN 988 30×42×0.3-St	[522]	3	00104094
Shim DIN 988 30×42×0.5-St	[523]	3	00123455
Shim DIN 988 37×47×0.3-St	[507]	3	00103977
Shim DIN 988 37×47×0.5-St	[508]	3	00123404
Gear 2 (42234) R57/RF57 W3002 demo case (2-stage gear unit)	[2]	1	13442368
Gear 2 (41653) R57/RF57 W3002 demo case (3-stage gear unit)	[2]	1	13442376
Gear 4 (42668) R57/RF57 W3002 demo case	[4]	1	13442384
Gear 6 (42455) R57/RF57 W3002 demo case	[6]	1	13442392
Pinion (41343) R57/RF57 W3002 demo case (2-stage gear unit)	[1]	1	13442333

Designation	Item no.	Quantity	Part no.
Pinion (41610) R57/RF57 W3002 demo case (3-stage gear unit)	[1]	1	13442341
Deep groove ball bearing W6004	[34]	1	13316893
Deep groove ball bearing W6202	[42], [46]	2	13316915
Deep groove ball bearing W6206	[25]	1	13316877
Deep groove ball bearing W6207	[11]	1	13316869
Deep groove ball bearing W6302	[30]	1	13316885
Deep groove ball bearing W6303	[37]	1	13316907
Pinion shaft 3 R57 W3002 demo case	[3]	1	13438700
Pinion shaft 5 R57 W3002 demo case	[5]	1	13438719
Retaining ring DIN 471 16×1	[201]	2	00102687
Retaining ring DIN 471 30×1.5	[88]	2	00102776
Retaining ring DIN 472 35×1.5	[41], [47]	2	00103144
Retaining ring DIN 472 47×1.75	[39]	2	00103187
Closing cap R/RF57 37×30 demo case	[181]	1	10651004
Closing cap R/RF57 47×30 demo case	[131]	1	10686401
Screw plug W4085 M10×1-St-ADC3K	[59]	9	0011426X
Cylinder screw ISO 4762 M8×20-A2-70	[14]	6	00132047

5 Contact persons

For more information about the didactics modules please contact:

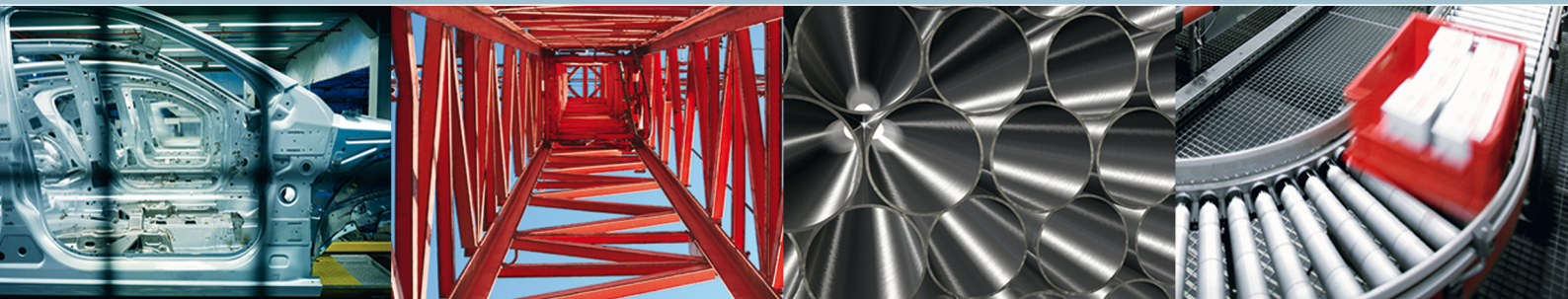
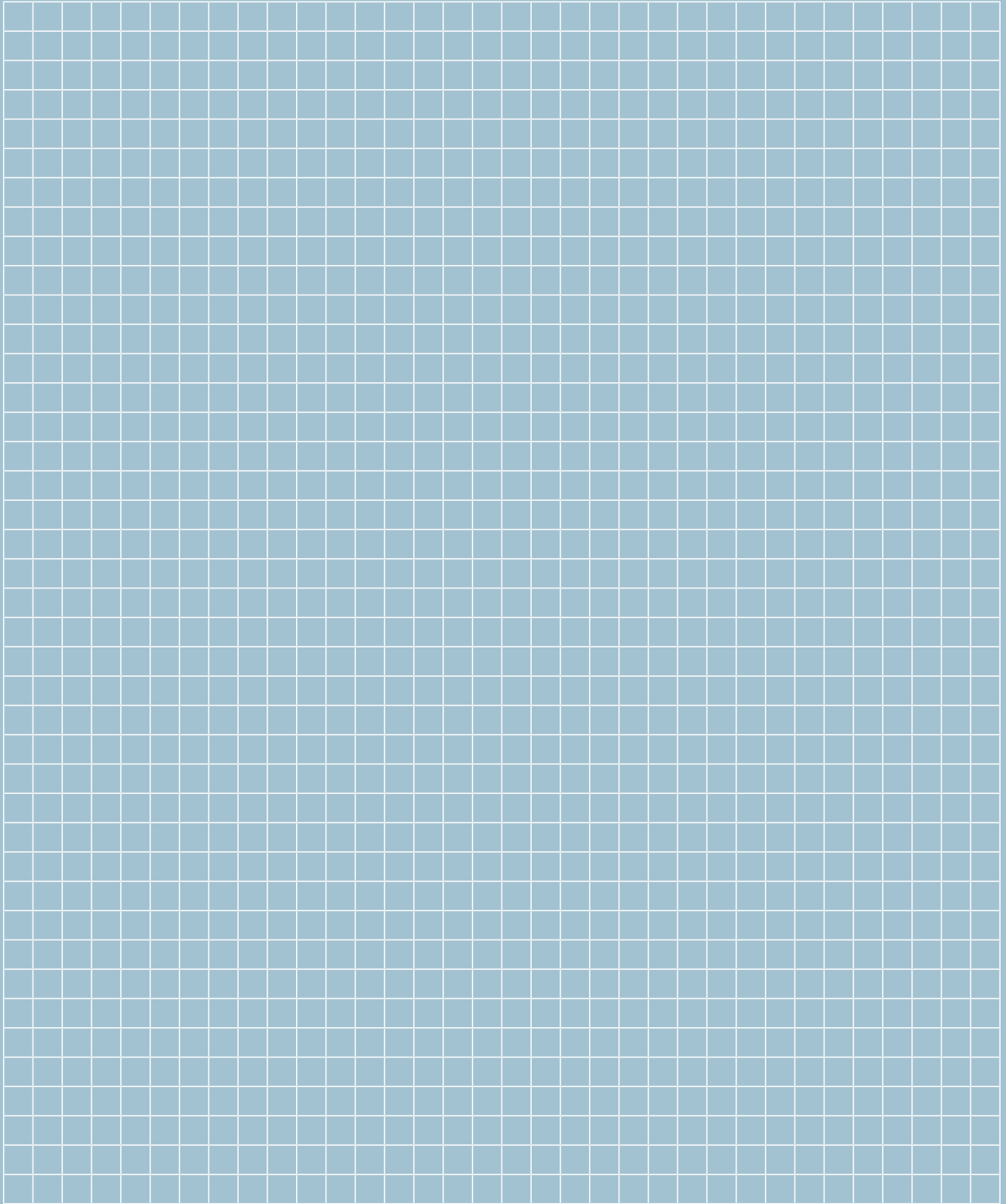
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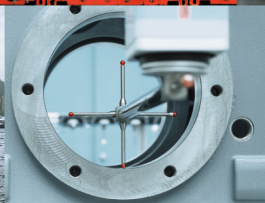












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Driving the world

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